

49. (Amended Thrice) A method of desorbing a macromolecular analyte from a probe surface comprising the steps of:

a) providing a probe that is removably insertable into a mass spectrometer, the probe having a surface for presenting the macromolecular analyte to at least one single energy source that emits energy capable of desorbing and ionizing the macromolecular analyte from the probe for analyte detection, wherein at least the surface comprises a non-metallic-material selected from the group consisting of glass, ceramic, polystyrene, polypropylene, polyethylene, polycarbonate, nylon, starch, agarose, and dextran; and

b) exposing the macromolecular analyte on the probe surface to energy from at least one single energy source, whereby the macromolecular analyte is desorbed and ionized.

50. (Amended Twice) The method of claim 49 wherein the energy source emits laser light that desorbs and ionizes the macromolecular analyte to produce an ion.

51. (Amended Twice) The method of claim 50 further comprising after step (b) the steps of:

c) modifying the macromolecular analyte chemically or enzymatically while deposited on the probe surface; and

d) repeating step (b).

52. (Amended Twice) The method of claim 50 wherein the probe surface comprises an array of locations, each location having at least one macromolecular analyte deposited thereon; and step (b) comprises desorbing and ionizing a first macromolecular analyte from a first location in the array;

and wherein the method further comprises the step of (c) desorbing and ionizing a second macromolecular analyte, from a second location in the array.

53. (Amended Twice) The method of claim 50 further comprising before step (b) the step of modifying the macromolecular analyte chemically or enzymatically while deposited on the probe surface.

63. (Amended Twice) The method of claim 50 wherein the macromolecular analyte comprises a protein or a peptide.

64. (Amended Thrice) A system for detecting an macromolecular analyte comprising:

a removably insertable probe having a surface for presenting the macromolecular analyte to at least one single energy source that emits energy capable of desorbing and ionizing the macromolecular analyte from the probe, wherein at least the surface comprises a non-metallic material selected from the group consisting of glass, ceramic, polystyrene, polypropylene, polyethylene, polycarbonate, nylon, starch, agarose, and dextran;

at least one single energy source that directs energy to the probe surface for desorbing and ionizing the macromolecular analyte; and

a detector in communication with the probe surface that detects the desorbed macromolecular analyte.

65. (Amended Once) The system of claim 64 which is a laser desorption mass spectrometer wherein:

the energy source emits laser light that desorbs and ionizes the macromolecular analyte to produce an ion,

the system further comprises means for accelerating the ion to the detector,

the detector detects the ion, and

the system further comprises means for determining the mass of the ion.

71. (Amended Once) The system of claim 64 further comprising means for accelerating the desorbed macromolecular analyte to the detector.

86. (Amended Thrice) A method for detecting a macromolecular analyte comprising the steps of:

a) providing a system comprising:

(1) a removably insertable probe having a surface for presenting the macromolecular analyte to at least one single energy source that emits energy capable of desorbing and ionizing the macromolecular analyte from the probe, wherein at least the surface comprises a non-metallic material selected from the group consisting of glass, ceramic, polystyrene, polypropylene, polyethylene, polycarbonate, nylon, starch, agarose, and dextran, wherein the macromolecular analyte is presented on the probe surface,

(2) at least one single energy source that directs energy to the probe surface for desorbing and ionizing the macromolecular analyte; and

(3) a detector in communication with the probe surface that detects the desorbed and ionized macromolecular analyte;

b) desorbing and ionizing at least a portion of the macromolecular analyte from the surface by exposing the macromolecular analyte to energy from at least one single energy source; and

c) detecting the desorbed and ionized macromolecular analyte with the detector.

87. (Amended Twice) The method of claim 86 wherein the system is a laser desorption mass spectrometer wherein the energy source emits laser light that desorbs and ionizes the macromolecular analyte to produce an ion, the detector detects the ion and the system further

comprises means for accelerating the ion to the detector, and the method further comprises determining the mass of the ion.

88. (Amended Twice) The method of claim 87 further comprising before step (b) the step of modifying the macromolecular analyte chemically or enzymatically while deposited on the probe surface.

89. (Amended Twice) The method of claim 87 further comprising after step (c) the steps of:

d) modifying the macromolecular analyte chemically or enzymatically while deposited on the probe surface; and

e) repeating steps b) and c).

90. (Amended Twice) The method of claim 87 wherein the probe surface comprises an array of locations, each location having at least one macromolecular analyte deposited thereon; and step (b) comprises desorbing and ionizing a first macromolecular analyte from a first location in the array;

and wherein the method further comprises the step of:

d) desorbing and ionizing a second macromolecular analyte from a second location in the array; and

e) detecting the desorbed and ionized second macromolecular analyte with the detector.

91. (Amended Once) The method of claim 87 further comprising the step of displaying the determined mass of the macromolecular analyte.

101. (Amended Once) The method of claim 87 wherein the macromolecular analyte comprises a protein or a peptide.

105. (Amended Once) The method of claim 50, wherein the macromolecular analyte is a biomolecule.

106. (Amended Once) The method of claim 50, wherein the macromolecular analyte is a biomolecule from an undifferentiated sample.

107. (Amended Once) The method of claim 50, wherein the macromolecular analyte is a nucleic acid.

108. (Amended Once) The system of claim 65, wherein the macromolecular analyte is a biomolecule.

109. (Amended Once) The system of claim 65, wherein the macromolecular analyte is a biomolecule from an undifferentiated sample.

110. (Amended Once) The system of claim 65, wherein the macromolecular analyte is a protein or a peptide.
111. (Amended Once) The method of claim 87, wherein the macromolecular analyte is a biomolecule.
112. (Amended Once) The method of claim 87, wherein the macromolecular analyte is a biomolecule from an undifferentiated sample.
113. (Amended Once) The method of claim 87, wherein the macromolecular analyte is a protein or a peptide.
120. (Amended Once) The method of claim 50, wherein the macromolecular analyte is a carbohydrate.
121. (Amended Once) The system of claim 65, wherein the macromolecular analyte is a nucleic acid.
122. (Amended Once) The system of claim 65, wherein the macromolecular analyte is a carbohydrate.
123. (Amended Once) The method of claim 87, wherein the macromolecular analyte is a nucleic acid.
124. (Amended Once) The method of claim 87, wherein the macromolecular analyte is a carbohydrate.

Please add claims 125-148.

125. The method of claim 49 further comprising the macromolecular analyte associated with a matrix material for promoting desorption and ionization of the macromolecular analyte on the surface.

126. The method of claim 64 further comprising the macromolecular analyte associated with a matrix material for promoting desorption and ionization of the macromolecular analyte on the surface.

127. The method of claim 86 further comprising the macromolecular analyte associated with a matrix material for promoting desorption and ionization of the macromolecular analyte on the surface.

128. The method of claim 49 wherein the non-metallic material is glass.

129. The method of claim 49 wherein the non-metallic material is ceramic.

130. The method of claim 49 wherein the non-metallic material is polystyrene.

131. The method of claim 49 wherein the non-metallic material is polypropylene.

132. The method of claim 49 wherein the non-metallic material is polycarbonate.

133. The method of claim 49 wherein the non-metallic material is nylon.

134. The method of claim 49 wherein the non-metallic material is dextran.

135. The system of claim 64 wherein the non-metallic material is glass.

136. The system of claim 64 wherein the non-metallic material is ceramic.

137. The system of claim 64 wherein the non-metallic material is polystyrene.

138. The system of claim 64 wherein the non-metallic material is polypropylene.

139. The system of claim 64 wherein the non-metallic material is polycarbonate.

140. The system of claim 64 wherein the non-metallic material is nylon.

141. The system of claim 64 wherein the non-metallic material is dextran.

142. The method of claim 86 wherein the non-metallic material is glass.
143. The method of claim 86 wherein the non-metallic material is ceramic.
144. The method of claim 86 wherein the non-metallic material is polystyrene.
145. The method of claim 86 wherein the non-metallic material is polypropylene.
146. The method of claim 86 wherein the non-metallic material is polycarbonate.
147. The method of claim 86 wherein the non-metallic material is nylon.
148. The method of claim 86 wherein the non-metallic material is dextran.